Idaho 6th Grade Direct Mathematics Assessment

Minimal Errors

Advanced application of basic skills

2003 6th GRADE MAIN RANGEFINDER 4

It is important that you show or explain how you solved the problems on this assessment. If you use a calculator, show how you set up the math.

1. A 6th grade class of 30 students at Sunset School earned an ice cream party. They have $45.00 to spend.

ITEM	SERVINGS	COST
Hot Fudge	6	$2.45
Whipped Cream	10	$1.30
Cherries	15	$0.85
Ice Cream	12	$8.25

a. How many containers of ice cream are needed for each student to have one serving? *Show or explain how you found your answer.*

3 containers

12 x 3 = 36 containers

b. What is the total cost of the ice cream party if each student has ice cream, hot fudge, whipped cream and a cherry? How much change will be returned from the $45.00? *Show or explain how you found your* answer.

Hot Fudge = 5 containers

Cherries = 2 containers

Ice Cream = 3 containers

Whipped Cream = 3 containers

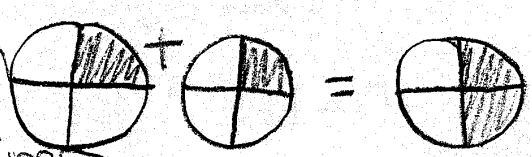
$42.40 returned

c. About how much will one serving of hot fudge cost? *Show or explain how you found your answer.*

One Serving of Hot Fudge = about $0.40

d. When the party was over, there was ¼ of a container of ice cream left and ¼ of another container of ice cream left. What fraction of one whole container would be remaining? *Show or explain how you found your answer.*

$\frac{1}{4} \times \frac{2}{1} = \frac{2}{4} = \frac{1}{2}$ of a container left over

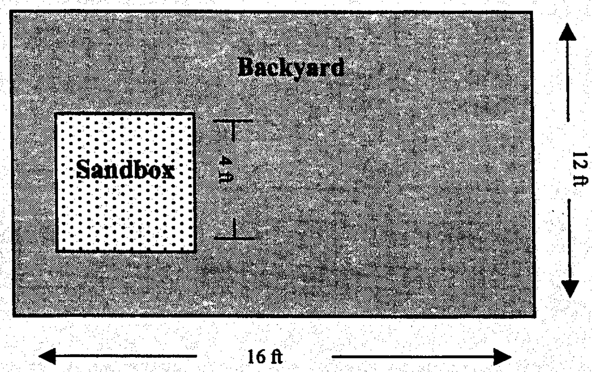


Advanced mathematical use of symbols and communication skills

Read problems 2, 3, 4, and 5 on this and the next two pages. Select three problems to answer. Answer ALL of the parts of the three problems you select to answer. Cross out the one problem that you do not choose to answer.

2. A family has decided to put a square sandbox in their backyard.

Determines the solutions accurately



a. What is the perimeter of their backyard? *Show or explain how you found your answer.*

perimeter = add up all the sides

12 ft + 12 ft = 24 ft; 16 ft + 16 ft = 32 ft; 24 ft + 32 ft = 56 ft

(56 ft)

b. In order to put a wooden border around the sandbox and the backyard, how much border is needed? *Show or explain how you found your answer.*

12 ft + 12 ft = 24 ft; 16 ft + 16 ft = 32 ft; 24 ft + 32 ft = 56 ft = backyard

4 + 4 = 8; 4 + 4 = 8; 16 ft = Sandbox

56 ft + 16 ft

56 ft + 16 ft = 72 ft

(72 ft)

c. The wooden border is sold in 1 yd sections. How many sections does the family need to purchase? *Show or explain how you found your* answer.

1 yard = 3 feet

72 ft ÷ 3 = 24 yrds

(24 sections)

Innovation and creativity

d. What is the area of the sandbox and what fraction of the total backyard area is this? *Show or explain how you found your answer.*

A = L x w
A = 4 x 4
A = 16 ft² — Sandbox

A = L x w
A = 12 x 16
A = 192 ft² — backyard

12 x 16: 72 + 120 = 192

16/192 = 1/12

192 ÷ 16 = 12

Higher-order thinking skills

3. Jordan's piano practice times are shown in the table below.

Minutes Jordan Practiced						
Day	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Minutes	30	22	45	15	26	30

a. What is her average (mean) practice time? *Show or explain how you found your answer.*

15 + 26 + 30 = 71 30 + 22 + 45 = 97 97 + 71 = 168 6)168 = 28

28 minutes

mean = average = add up all the #'s and divide by that many #'s

b. What is the mode of her practice times? *Show or explain how you found your answer.*

mode = how many times one # is repeated (30) mode = 30

c. Using the Jordan's six practice times, find her median practice time. *Show or explain how you found your answer.*

median = the middle # + and the ÷

15, 22, 26, 30, 30, 45 30 + 26 = 56 2)56 = 28

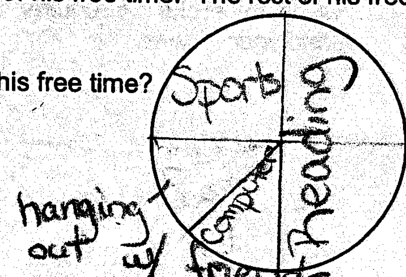
median = 28

d. The piano teacher wants Jordan to practice 30 minutes a day. How many minutes will she have to practice on Sunday to have a mean practice time of 30 minutes? *Show or explain how you found your answer.*

After using a calculator I finally found a # that would add up with all the other #'s + divided evenly by 7 to get 30 = 42

4. The circle below represents Mike's free time. Mike reads during ½ of his free time. Sports take up ¼ of his free time. He works on his computer ⅛ of his free time. The rest of his free time is spent hanging out with his friends.

a. Use the circle at the right to graph how Mike spends his free time? *Label the graph and each section.*



Advanced understanding of situations

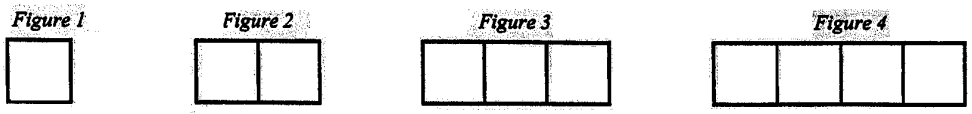
b. What fraction of his free time is spent hanging out with his friends? *Show or explain how you found your answer.*

1/8 I got 1/8 because that was the fraction that was left over.

c. If he spends 60 minutes reading, how many minutes are spent working on his computer? *Show or explain how you found your answer.*

Reading = 60 min hanging out w/ friends = 15 min
Sports = 30 min. computer = 15 min

5. Terry used Popsicle sticks to make the first four figures of the pattern below.



a. Complete the table by using the pattern from the figures. *Show or explain how you found your answer.*

Figure Number	Number of Sticks
1	4
2	7
3	10
4	13

4 ×3, +1
7 ×3, +1
10 ×3, +1

b. How many sticks are required to make figure 7 in the pattern? *Show or explain how you found your answer.*

1 = 4
2 = 7
3 = 10
4 = 13
5 = 16
6 = 19
7 = 22

Effective problem-solving strategies

c. How many sticks are required to make figure 25 in the pattern? *Show or explain how you found your answer.*

25 × 3 = 75 + 1 = 76

The pattern is x the # by 3 then + 1

d. Let *n* represent the number of the figure. Write a mathematical expression or rule that explains the relationship between the number of the figure and the number of sticks needed. *Show or explain how you found your answer.*

The rule is: you multiply n by 3 then you add 1.

Solutions are reasonable and well-defended